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ABSTRACT

This report covers characteristics of accelerated education and the applicability of accelerated education to the disadvantaged. The report reviews eight approaches to accelerated education: (1) traditional accelerated practices; (2) suggestive-accelerated learning and teaching; (3) Montessori method; (4) Bereiter-Engelmann approach; (5) Yale Child Study Center approach; (6) mastery learning; (7) Better Baby Institute approach; and (8) use effective use of time. Factors which inhibit the learning of the disadvantaged are discussed, and implications of the factors are hypothesized. An approach for curricula of accelerated schools is developed. Major assumptions underlying the organization of an accelerated school include unity of purpose among parents, teachers, and students; empowerment of key participants in the school; and use of the strengths of all available resources. Features of the accelerated school include school-based governance; a clear set of goals; pupil and school assessment; awareness of nutritional and health status of students; curriculum which places heavy emphasis on language use in all forms; instructional strategies which reinforce the curriculum; and participation of parents. A list of 65 references is included. (RJC)

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Accelerated Schools for At-Risk Students

Henry M. Levin

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FOREWORD

Accelerated Schools for At-Risk Students by Henry Levin is one of a series of papers on enhancing the efficiency of American schooling commissioned by the Center for Policy Research in Education. Several scholars were asked present their views on ways to expose students to more, better or deeper content. For example, Senta Raizen (Increasing Educational Productivity Through Improving the Science Curriculum) and Thomas Romberg (Changes in School Mathematics: Curricular Changes, Instructional Changes, and Indicators of Change) discuss how changes in science and mathematics curricula and sequencing would improve exposure and performance in those subject areas.

Henry Levin's approach is to propose a model that would particularly benefit at-risk students by accelerating their education in all elementary subjects. He argues that there is a crisis in the education of such students, as evidenced by low academic achievement and high dropout rates, which warrants radical solutions. After reviewing the components of and previous approaches to accelerated education, Levin elaborates the features of an Accelerated School for the educationally disadvantaged. The school's goal would be to close the achievement gap by the end of sixth grade. In keeping with the need for fundamental change, Levin proposes not only a faster-paced and more challenging curriculum but also structural, governance, instructional, and community and parent outreach strategies that support the aim of bringing the disadvantaged into the educational mainstream.

Levin develops a guiding educational philosophy and a set of exemplary practices from the best available models and research. The Accelerated School model has been adopted by schools in California and Missouri and is under consideration in Illinois. It is too soon to judge the results of these pilots, but not too soon to give wider exposure to the concept. In that spirit, the Center is pleased to provide the opportunity for readers to examine the model as Levin describes it in the following pages. Our hope is that it will spur discussion and debate and advance the search for solutions to a critical national problem.

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* * * * * *

Henry M. Levin is professor of education and economics at Stanford University and director of the Center for Educational Research at Stanford (CERAS). One of many projects he oversees is the Center's Accelerated Schools Project. Dr. Levin is a specialist in the economics of human resources and has written numerous books and articles on the subject. He is co-author of Schooling and Work in the Democratic State (Stanford University Press, 1985).

I. INTRODUCTION

This paper addresses one of the most serious challenges facing American education, raising the academic performance of educationally disadvantaged or at-risk students. It proposes a strategy for establishing accelerated schools for the disadvantaged that would bring them into the educational mainstream by the end of elementary school. This section addresses the background for the challenge, and the next ones develop the concepts of accelerated learning and accelerated education. The final part sets out a strategy for launching a movement of accelerated schools for the disadvantaged. It should be noted that the strategy is already being applied in a number of pilot schools in California and other parts of the country.

Pupils who are defined as educationally disadvantaged or "at-risk" lack the home and community resources to fully benefit from conventional schooling practices. Because of poverty, cultural differences, or linguistic differences, they tend to have low academic achievement and experience high secondary school drop-out rates. Such students are especially concentrated among racial and ethnic minority groups, immigrants, language minorities, and economically disadvantaged populations.

In the absence of drastic improvements in the education of disadvantaged students, they are likely to become disadvantaged adults with high rates of unemployment, low paying jobs, poor political participation, and they are likely to produce children who will be, themselves, educationally disadvantaged.[1] At the present time it is estimated that about 30 percent of enrollments in elementary and secondary schools are disadvantaged (Levin 1986; Natriello, McDill, and Pallas 1988). This proportion is rising rapidly because disadvantaged populations are younger and have much higher birth rates than the non-disadvantaged and because

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[1] Throughout this paper the terms educationally disadvantaged and at risk students will be used interchangeably. Both terms are objectionable. The first carries the baggage of the sixties in which a heavy emphasis was placed on the deficiencies of the child rather than the school. The second is so vague that it could easily encompass gifted and talented children, the physically or mentally handicapped, the obese, the shy, and so on. Unfortunately, no better alternative terminology is available or widely acceptable at the present time. Details of the arguments and evidence supporting the consequences of the present approaches to the education of the disadvantaged are found in Levin (1986).

of the high rates of immigration from impoverished areas of the world.

Such rapid increases in the number of educationally disadvantaged students mean that in the future we will see more and more disadvantaged adults, unless we are able to intervene successfully. This raises the specter of a two-tiered society composed of an upper-tier of whites and successful Asians who are able to gain access to the best jobs and incomes and a more rapidly, growing underclass of racial minorities and disadvantaged whites who face poverty, unemployment, and low wages. Such a development will foment major political conflict and social disruption as the disadvantaged pursue political remedies to improve their condition.

A rising population of disadvantaged adults also has dire consequences for the economy. This phenomenon will lead to a serious deterioration in the labor force as increasingly high proportions of labor market entrants are unable to perform satisfactorily in available jobs or benefit from training that might improve their performance. This economic impact will jeopardize especially the competitive position of those states and regions with large concentrations of disadvantaged populations, but it will also affect the nation as a whole. At the same time, there will be increasing pressures to expand public services that are associated with the needy such as public assistance, public health, and criminal justice. The middle class will resist paying for these services as their own incomes deteriorate in an economy that will be suffering from a ill-prepared work force.

It is obvious that the emerging crisis can only be avoided or alleviated by the development of a highly successful intervention that will improve substantially the educational performance of the disadvantaged. The educationally disadvantaged begin their schooling with lower levels of performance in those areas that are valued by schools, even though they show talents in other areas and possess knowledge that is unique to their cultures. In early research on the learning of disadvantaged students, Deutsch (1965) concluded that small deficiencies at an early age lead to slower learning in existing schools which increases the magnitude of the deficiencies at later ages. Indeed, over their schooling years, the achievement gap grows between their school performance and that of their non-disadvantaged peers.

If the goal is to make certain that at some future time their performance approaches or is equal to that of their non-disadvantaged colleagues, a radical

change is called for. To close the achievement gap, disadvantaged children must learn at a faster rate than other children. Accordingly, the design and implementation of schooling interventions for the educationally disadvantaged must be based upon principles of accelerating their learning beyond their normal rate--indeed beyond the rate of learning of the non-disadvantaged.

The purpose of this paper is to address systematically the characteristics of accelerated education and its applicability to the education of the disadvantaged. First, I will review the concept of accelerated learning in terms of its basic elements. In the following section, I will examine a few of the many approaches and movements that are based upon accelerated principles. Finally, I will discuss the notion of an accelerated school with special applicability to the educationally disadvantaged.

II. ACCELERATED LEARNING AND ACCELERATED EDUCATION

Accelerated learning is a very general concept which refers to increasing the amount of learning that takes place within a given time period. The amount of learning can be reflected in more learning at a given level of difficulty or at a higher level of difficulty or some combination of the two. It is important to note three characteristics of this definition. First, it is time-based in that it is determined by how much learning takes place within a given time period. Usually this period will be measured in weeks, months, or years rather than minutes or hours. Second, the notion of more learning is a socially based concept in that what is considered to be "more" and "more difficult" must be socially defined. Finally, the concept of acceleration is necessarily a relative one, that is, relative to "normal" learning or non-accelerated learning. Thus, learning is accelerated if it occurs at a higher rate than the normal alternative.

COMPONENTS OF LEARNING

Accelerated education is defined as the strategy for achieving accelerated learning. Since accelerated learning takes place under specific conditions, it is the purpose of accelerated education to create those conditions. This can be placed into a standard theory of school-based learning such as that of Carroll (1963). The amount that a student will learn over a period of time will depend upon four factors:[2] 1) capacity; 2) effort; 3) time devoted to learning; and 4) quality of learning resources.

Capacity refers to the personal attributes of the student that will determine the success with which he or she can undertake the learning task. Different students have different aptitudes to learn specific subjects. The meaning of aptitude in this sense is much broader than ability, because it includes all factors that will determine the capacity of a student to learn at a given time. Thus, the term includes factors related to intellectual ability, personality, health and nutrition, and emotional state of the learner. Capacity must always be referenced to a particular learning task or subject, because it may vary along these dimensions.

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[2] An application of this model to teachers and their performance is found in Levin (1980). An application to students is found in Levin and Tsang (1987).

Effort describes how intensely capacity is used to achieve learning for any given time devoted to the learning task. Learning occurs when the student devotes effort to applying his or her capacity to a specific learning task or set of tasks. The greater the effort, capacity held constant, the more that will be learned. Students of lower capacity who put in great effort may learn considerably more than those of higher capacity who do not put in such effort. Effort is a derivative of motivation and incentives, factors that are often denoted in other learning models.

Time refers to the period devoted to a specific learning endeavor. In general, the higher the exposure to a particular learning activity, the more that will be learned. Time can be allocated to learning both inside and outside the classroom, so different categories of time can be used in the analysis of this dimension. Likewise, even within the classroom it is possible to categorize different uses of time to see how heavily they involve a particular type of learning. As educational research has shown, clock time on a particular subject does not mean that all of that time is devoted to instruction or student effort in that subject (Denham and Lieberman 1980).

Quality of Learning Resources refers to the amount and type of resources available to the learner. Obviously, this will consist of such factors as the quality of teaching, the characteristics of the curriculum and the organization of instruction, the availability of textbooks and learning materials, characteristics of fellow students, and the quality of the learning facility and home environment.

PERTINENCE TO ACCELERATION

At a general level, it is clear that there are a wide range of strategies that can be used to accelerate learning by increasing capacity, effort, time, and quality of learning resources. The capacity of a child to learn is conditioned by his or her mental and physical state at the time learning is to take place as well as by the child's overall aptitude to learn. Disadvantaged children commonly lack access to the nutritional, medical, dental, and housing resources that enhance their capacity to learn. Even with high levels of effort, large time allocations to learning activities, and high quality learning resources, their capacity is limited by their personal situation. Thus, one strategy for accelerating learning is to improve the capacity of a child to learn by changing these aspects of his or her life through better health care, nutrition (Read 1977 & 1982), housing, and pre-

school learning experiences (Bronfenbrenner 1979).

Situational variables determine not only capacity, but also effort. It is difficult to put much effort into learning when suffering from low energy levels, dizziness, poor eyesight, headaches, or other untreated maladies. Of course, effort is also a matter of motivation, a factor that can be affected by the quality of instruction as well as the perceived rewards for committing oneself to learning activities. Accelerated strategies would focus on ways of increasing both the intrinsic attractiveness of learning activities as well as extrinsic rewards for putting effort into learning (Levin and Tsang 1987).

Both the amount of time and the way that time is used will affect learning. Thus, there is a close relation between the effectiveness of time on learning and the quality of instructional resources in determining how that time is used for instruction or other educational activities. Accelerated strategies would increase the amount of time devoted to specific learning activities as well as the effectiveness of the use of time. Under some conditions, an increase in time allocation to learning activities will result in a reduction in student effort (Levin 1984). Thus, this type of interaction must be considered when increasing time to accelerate learning.

The four components of learning may be separated analytically, but they surely operate interactively and simultaneously when affecting learning. One implication of this insight is that strategies to accelerate learning should operate on all four dimensions rather than a single one and should be designed to take account of interactions among the four factors.

III. APPROACHES TO ACCELERATED EDUCATION

Accelerated education can be defined as any instructional strategy designed to substantially increase the overall pace of learning, that is, to effect accelerated learning. According to this definition, there are many approaches to accelerated learning, even if they do not use the accelerated nomenclature. In this section, I will review briefly a number of approaches to accelerated education.

Virtually all educational interventions are designed to increase learning, either directly or indirectly. For example, behavioral management approaches are aimed at improving the learning environment and making more time available for learning. Curriculum reforms emphasize more effective ways to learn particular subjects or curriculum subtopics. In the larger sense, all such attempts can be characterized as approaches to accelerate education in that they are purposive efforts to increase the rate of learning.

Accelerated education as a distinct phenomenon can be differentiated from other interventions by the establishment of two criteria. First, it is characterized by a systemic underlying approach that is designed to affect a large set of learning influences rather than being restricted to a narrow aspect of the learning process such as improvements in teacher performance, curriculum, or school organization. It is systemic in character reflecting broad changes in the nature of instruction, use of time, and attempts to enhance student capacity and effort.

Second, it is characterized by a purposive set of accelerated goals. That is, the overall effect is to raise achievement substantially beyond what it would be in the absence of the accelerated approach. Such a goal may be explicit in terms of closing the achievement difference between disadvantaged and nondisadvantaged students by accelerating the schooling of the former, or it can be tacit in terms of reaching mastery levels of achievement in a shorter period of time. It is useful to give examples of both.

TRADITIONAL ACCELERATED PRACTICES

One common approach to accelerated education is the practice of placing more able students in a particular schooling level at an earlier age than their peers, enabling them to skip grades or giving them advanced placement in courses (Klausmeier and Weirsma 1964; Pressey 1949). The centrality of this definition of accelerated education is reflected by the fact that the major empirical summary of the educational effectiveness of acceleration is based almost exclusively upon studies that use this approach (Kulik and Kulik 1984). A related definition of accelerated learning is the compression of the learning experience into a shorter period of time through heavier courseloads, summer attendance, and credit by examination as described by Unzicker (1932) and Klausmeier and Wiersma (1964).

Enriching the content of courses or providing honors courses is another approach to accelerated education (Passow 1985; Schofield and Francis, 1982). This approach is often based upon the view that a greater intensity of learning through coverage of more topics and material at a higher level of challenge in a given time period will accelerate learning. It is a particularly common approach to acceleration for students who are viewed as intellectually gifted or precocious and has implications for student effort, time, and learning resources.

SUGGESTIVE-ACCELERATED LEARNING AND TEACHING

The term accelerated education is commonly used to refer to a movement that was established by the Bulgarian psychiatrist Georgi Lozanov (1977). In his clinical work, Lozanov discovered principles that made his subjects receptive to learning. Applications to foreign language instruction showed that 5 to 50 times as much material could be covered as in traditional instruction, with equal or superior rates of retention. The approach builds upon the use of music, relaxation, and visualization techniques and an integration of use of the two hemispheres of the brain to promote a receptivity to learning. The purpose is to increase learning enjoyment and tap otherwise unused learning reserves through the power of suggestion (Caskey 1980; Lerede 1983).

Within the last fifteen years, Lozanov's teachings and results have become widely disseminated in Europe and North America. Although Lozanov has called his approach by the term "Suggestology," it is known in the U.S. and Canada as the Suggestive Accelerative Learning Technique (SALT). The Society for Accelerative Learning and Teaching publishes a journal with theoretical and

empirical studies based upon Lozanov's methods. Most applications have been in the foreign language area, but there are increasing applications in other areas as well.

The approach focuses mainly on increasing student capacity and effort to learn through altering the affective domain. Both the conditions of and strategies for learning are designed to make students more open to learning and to make learning more enjoyable. The Lozanov method is less developed with respect to its implications for altering the structure and content of instruction than it is in making the learner more receptive to instruction.

MONTESSORI

The Montessori method of instruction clearly meets the criteria of accelerated education in terms of its commitment and comprehensiveness (Montessori 1965, Montessori Jr. 1976, Standing 1959). Montessori was a physician who undertook responsibility for the development of a pre-primary school for children in the San Lorenzo slum district in Rome at the turn of the century. She had unusual observational skills and discovered that children possess different and higher qualities than we usually attribute to them. Among her observations were that the children had a high level of mental concentration, a love of order, a preference for choice, and a preference for "work-type" activities over play. She also found that at ages 4 and 5 they burst spontaneously into writing and that writing came before reading in their development.

Accordingly, she created a learning environment and learning techniques to meet their needs. Much of this was based upon creating materials that drew upon all of the senses, a need that she claimed was especially important for disadvantaged children who lack the material environment necessary for sensory stimulation. The Montessori school is a structured learning environment with considerable scope for student choice of activities and a rich set of manipulable materials to reinforce learning. Its accelerated properties are based upon increasing the child's capacity and effort at learning and providing instructional resources tailored to accelerate learning. Although the Montessori method had its origins with disadvantaged children, it is ironic that it is associated today, primarily, with the schooling of the non-disadvantaged.

BEREITER-ENGELMANN

A markedly different approach to pre-school accelerated education is found in the approach of Bereiter and Engelmann (1966) which is more commonly referred to as direct instruction (Becker and Carnine 1980). Although they do not use the word "accelerated" to refer to their approach, it is specifically designed to close the achievement gap between disadvantaged and nondisadvantaged students by achieving an "above-average rate of learning" for the former (Bereiter and Engelmann 1966: 6-8). In order to do this they place a heavy emphasis on language development in response to the premise that it is cultural and language deprivation that is the source of the achievement gap rather than sensory deprivation as Montessori claimed.

Their pedagogical approach is to teach through associative learning techniques those skills that are necessary to school performance in which a short period of rigid, repetitive presentation is followed by a question period calling for unison responses (Bereiter and Engelmann 1966: Chap. 5). A high level of student affect is achieved through eliciting loud and energetic unison responses from students to teacher queries. Repetition is emphasized, and only short teacher explanations are encouraged. All responses are characterized as being unambiguously correct or incorrect.

This approach also draws heavily on all four components of the learning process in enhancing student capacity and effort, capitalizing on the pre-school period for learning, and organizing the learning environment to parsimoniously teach those skills which are viewed as necessary for future school success. There is some evidence that the achievement gap in the primary grades can be narrowed considerably with direct instruction (Becker and Carnine 1980; Gersten and Keating 1987; Gersten, Becker, Heiry, and White 1984). Meyer (1984) found that about 55 percent of students from an inner-city elementary school that had used the Distar curriculum of Becker and associates eventually graduated from high school in comparison with about 32 percent of a control group of students. However, the approach has also been criticized as focusing instrumentally on what is tested rather than preparing students to master the higher order skills that will be needed in later grades (Calfee 1986).

YALE CHILD STUDY CENTER

A very different approach to the education of the disadvantaged is one developed by James Comer and his associates at the Yale Child Study Center School Development Program (Comer 1980, 1985, 1987). The Comer team has worked with schools in the city of New Haven, Connecticut since 1968, with most of the focus on the King School (a school covering grades K-4). Student enrollments in the schools have been predominantly black and from low income families. At fourth grade the students were almost two years behind national norms on standardized tests in 1969.

Comer used a process model in which administrators, parents, teachers, and support staff collaborated to address the problems of the school. A mental health team was used to provide support to the school in carrying out a comprehensive plan for improving school social climate, academic performance, and staff development. The mental health team consisted of a psychiatrist, social workers, and psychologists. They were especially equipped to relate parental, family, and community needs and practices to school practices in a way in which would enhance the academic and social performance of students. Planning was done collaboratively and included the establishment of new instructional programs and curriculum. Parents and teachers had important roles in governing the school and contributing to school decisions, and the overall approach was one of problem-solving rather than finding fault.

The Yale approach assumed:

> ...that the vast majority of children can acquire the psychological, social, and academic competencies needed to function adequately in and after school when the school environment is adequate. The hypothesis is that as the organization and management system of a school successfully provides all participants in the education process--school staff, parents and students--with adequate educational and interactional skills and support, the academic achievement and social performance of students will improve and provide residual academic, social, and psychological benefits to students (Comer 1985:155).

This collaborative approach, using a mental health team for staff support, showed strong results over time, ones that have been sustained after the intervention team left the school. In 1986 fourth grade students in the King School scored about a year above grade level in the Iowa Test of Basic Skills with a socio-economic composition similar to that in 1969 when students scored almost two years below grade level (Comer 1987). Student attendance went from one of the

poorest in the New Haven to one of the best, and staff attendance was among the highest and staff turnover among the lowest in the city.

A follow-up study of graduates of the King School found that among 7th graders who had attended kindergarten to fourth grade at the School, former King students were performing better than a group of otherwise similar "control" students who had attended other schools (Comer 1985: 157). For example, former King students showed total language scores at a 7.7 grade level in comparison with control students with a 5.3 grade level. Differences were also profound in mathematics and other skill areas.

MASTERY LEARNING

Mastery learning is an approach that qualifies as a form of accelerated education in terms of its comprehensiveness and its goals to accelerate learning. It owes its origins to the work of Carroll (1963) who stressed that the opportunity to learn is a function of both the quality of instruction and the time available to learn. Building on these concepts, Bloom (1968) argued that most students can learn most school subjects if given enough time. Moreover, the amount of time required to learn can be reduced by improving the entry level characteristics of the student and tailoring instruction to capitalize on the student's characteristics. Bloom maintained that an appropriately designed instructional approach could increase school learning by more nearly equalizing entry level characteristics of students and using resources to reduce the variance in time among students to reach mastery of a learning unit.

The Bloom approach to mastery learning is designed to accelerate learning by improving the cognitive and affective entry characteristics of students and tailoring instruction to reduce the variance in time that it takes to reach mastery among slow and fast learners. This is accomplished by setting mastery levels for each unit that must be met by each student according to criterion-based tests. Students who meet mastery criteria quickly can move on to enrichment tasks and other activities, while classroom resources are concentrated increasingly on the remaining students to maximize the number who reach mastery in a given overall time frame. There are many techniques for doing this, incorporating efforts to improve student capacity and effort, to provide additional time as needed, and to use efficient and effective instructional approaches (Bloom 1976; Jones, et al. 1985). Evaluations of mastery learning have shown relatively high levels of

effectiveness, although the evidence has been challenged on several grounds (Slavin 1986).

A specific application of mastery learning can be found in a major program to assist disadvantaged youth and adults to acquire basic skills that are necessary to benefit from job training. The Remediation and Training Institute of Washington D.C. has created the Comprehensive Competencies Program (CCP) which provided services to over 4000 students in 1984-85 (Remediation and Training Institute 1985). The program is based upon diagnosing and measuring competency attainment through the use of more than 600 competency tests. Students are provided with individualized lesson assignments based upon the use of print, audiovisual, and computer-based learning materials. Entry level achievement for students in 1984-85 was equivalent to about 8th grade in reading and 7th grade in math. For every 100 hours of instruction (extrapolated from 20 hour samples), the participants gained the equivalent of more than 2 grades in reading and about 4 grades in mathematics.

BETTER BABY INSTITUTE

The Better Baby Institute in Philadelphia sponsors a pre-school approach to accelerated learning. The Institute is best known for its work with developmentally disabled youngsters through "patterning", the repetition of physical and cognitive exercises that must be developed in a particular sequence for development. The Institute has developed a program:

> To multiply the intelligence of the world's population by increasing the intelligence of every newborn baby during the first three years of life while simultaneously strengthening family ties (Doman and Armentrout 1980: 21)...This Plan will result not only in the raising of intelligence by an average of fifty points but will also result in the elimination of reading problems and of learning problems (Doman and Armentrout 1980: 24).

This is to be done by exposing children in their first three years to a program of instruction administered by their parents (usually the mother because of the substantial, daily time requirements). Parents are provided with instructions in such areas as intellectual growth, and they are expected to teach their babies reading, mathematics, foreign languages, and other subjects on a programmed basis over the first three years. Much of this is done through the use of flash cards with words and pictures and the labeling of objects with

names, numbers, or foreign words that describe them. Parents are expected to drill their babies on a daily basis through associative learning techniques.

It is difficult to evaluate the results of this program, because of the extraordinary selection effect implicit in its participation. That is, parents who are willing to devote their time and effort for several hours a day as well as who can afford the expense of the training and materials will likely be ones who would allocate considerable time and effort to their children's development even in the absence of this particular program. In any event the plan reflects an attempt to accelerate considerably the intellectual development of children by increasing their capacity and effort to learn as well as by expanding the time committed to learning activities in a structured learning environment.

USE OF TIME

A final strategy for acceleration that should be discussed is the effective use of time. This approach has two components: more learning time and more effective use of time. More learning time can be obtained both within school and outside of school. The addition of learning time within school can be obtained through longer school days and annual sessions, summer programs (Heyns 1978) and a greater concentration of time on instruction through the reduction of time devoted to other activities and student disruption. Additional learning time outside of school can be achieved through independent assignments and homework as well as the expansion of use of leisure time for reading and other learning activities.

More effective use of time can be attained through greater student engagement and more time devoted to specific learning tasks within general time allocations. These strategies are discussed at length in Denham and Lieberman (1980), Fisher and Berliner (1985), and Stallings (1980). Learning may also be enhanced through increased the pacing of instruction. Instructional pacing refers to the speed at which material is presented and covered in the instructional process (Barr 1973-74; Good, Grouws, and Beckerman 1978). When the pace is too rapid, students may be unable to keep up. When it is too slow, students lose valuable time that could be used to learn more material, and they might also suffer in motivation because of boredom. Accordingly, the pacing of instruction should be rapid enough to keep students engaged and enable them to master material.

In summary, there are many approaches to accelerated education, even though few are widely applied in the schools. All of them build on attempts to increase learning through altering the quality of instructional services, time devoted to learning, and/or the capacity and effort of students with respect to learning. In the next section, we will explore the application of accelerated education to the disadvantaged.

IV. ACCELERATED SCHOOLS AND THE DISADVANTAGED

Given the compelling case for using accelerated education to raise the school performance of disadvantaged students, it is remarkable how little it is used. Rather, it is identified most closely with strategies to raise the achievement of high achieving students as reflected in the meta-analysis by Kulik and Kulik (1984). The entry for "Accelerated Education" in the recently published International Encyclopedia of Education virtually equates the term with a strategy for assisting intellectually gifted students (Passow 1985). A 1986 search of literature in the ERIC Clearinghouse data base and Dissertation Abstracts found 125 entries for accelerated education, of which only a single one addressed the educationally disadvantaged. The vast majority were explicitly directed to high-achieving students.

There is little in the literature that is explicitly devoted to accelerating the learning of the disadvantaged other than the work of Bereiter and Engelmann (1966) and their followers (Becker and Carnine 1980), and Comer (1980). Comer (1985) has shown that an accelerated approach can raise student achievement of the disadvantaged to the national norms for all students during the elementary years and that this gain can be sustained in later years. According to this evidence, an effective accelerated approach can address effectively the need to bring educationally disadvantaged students into the educational mainstream. But consideration of a general application of accelerated concepts to the education of the disadvantaged must begin with an explicit understanding of the reason that existing schools do not succeed with the disadvantaged student.

FACTORS INHIBITING THE LEARNING OF THE DISADVANTAGED[3]

Disadvantaged students begin school with a learning gap in those areas valued by schools and mainstream economic and social institutions. The existing model of intervention assumes that they will not be able to maintain a normal instructional pace without prerequisite knowledge and learning skills. Thus, such youngsters are placed into less demanding instructional settings--either by being

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[3] An excellent survey of many of the issues that are identified in this section is Peterson (1986).

pulled-out of their regular classrooms or by adapting the regular classroom to their "needs"--to provide remedial or compensatory educational services. This approach appears to be both rational and compassionate, but it has exactly the opposite consequences.

First, this process reduces learning expectations on the parts of both the children and the educators who are assigned to teach them, and it stigmatizes both groups with a label of inferiority. Such a stigma undermines social support for the activity, denotes a low social status to the participants, and imparts negative self-images for the participants. The combination of low social status and low expectations is tantamount to treating such students as discards who are marginal to the mainstream educational agenda. Thus, the model creates the unhealthiest of all possible conditions under which to expect significant educational progress. In contrast, an effective approach should focus on creating learning activities which are characterized by high expectations and high status for the participants.

Second, the usual treatment of the educationally disadvantaged is not designed to bring students up to the point where they can benefit from mainstream instruction and perform at grade-level. There exist no timetables for doing so, and there are rarely incentives or even provisions for students to move from remedial instruction into the mainstream. In fact, since students in compensatory or remedial situations are expected to progress at a slower than "normal" pace, a self-fulfilling prophecy is realized as they fall farther and farther behind their non-disadvantaged counterparts. The result is that once a disadvantaged student is relegated to remedial or compensatory interventions, that student will be expected to learn at a slower rate, and the achievement gap between advantaged and disadvantaged students will grow. A successful program should set a deadline for closing the achievement gap so that, ultimately, educationally disadvantaged children will be able to benefit from mainstream instruction.

Third, by deliberately slowing the pace of instruction to a crawl, a heavy emphasis is placed on endless repetition of material through drill-and-practice. The result is that the school experience of the disadvantaged lacks intrinsic vitality, omits crucial learning skills and reinforcement, and moves at a plodding pace that reinforces low expectations. Exposure to concepts, analysis, problem solving, and interesting applications is largely proscribed in favor of decoding

skills in reading and arithmetic operations in mathematics in the primary grades on the premise that these fundamentals must be learned before anything more challenging can be attempted. Mechanics are stressed over content. Such a joyless experience further negates the child's feelings about school and diminishes the possibility that the child will view the school as a positive environment in which learning progress can be made. An effective curriculum for the disadvantaged should not only be faster paced and actively engage the interests of such children to enhance their motivation; it should include concepts, analysis, problem-solving, and interesting applications.

Most compensatory educational programs do not involve parents sufficiently or draw adequately upon available community resources. Parents are not viewed or utilized as a potentially positive influence for their childrens' learning. Furthermore, the professional staff at the school level are usually omitted from participating in the important educational decisions that they must ultimately implement. Such an omission means that teachers are expected to dedicate themselves to the implementation of programs which do not necessarily reflect their professional judgments, a condition which is not likely to spur great enthusiasm. The design and implementation of successful educational programs to address the needs of the educationally disadvantaged will require the involvement of parents, the use of community resources, and the extensive participation of teachers in formulating the interventions that will be provided.

APPLYING THESE LESSONS TO ACCELERATION

An effective approach to educating the disadvantaged should be characterized by high expectations, deadlines by which such children will be performing at grade level range, stimulating instructional programs, planning by the educational staff who will offer the program, and the use of all available resources including the parents of the students. In addition, it should use instructional strategies that are particularly appropriate for the disadvantaged and make better use of time.

Most important of all, the approach should incorporate a comprehensive set of strategies that mutually reinforce each other in creating an organizational push toward raising the achievement of students to grade level. Except for the approach used by the Yale Child Study Center (Comer 1980), virtually none of the accelerated approaches discussed earlier uses such interactive strategies. Most of

the other accelerated strategies can be placed into an organizational approach, but they are not organizational approaches in themselves.

An accelerated school functions to accelerate the learning of disadvantaged students as an entirety rather than as a set of discrete programs or practices. That is, the organizational approach serves to weave together a set of harmonious practices that will reinforce each other towards a common end.

The Accelerated School I discuss in the remaining pages is a transitional elementary school designed to bring disadvantaged children up to grade level by the completion of the sixth grade. The goal of the school is to enable disadvantaged students to benefit from mainstream secondary school instruction by effectively closing the achievement gap in elementary school. Bringing children into the educational mainstream means more than bringing them up to grade level in basic skills which are measured by standardized tests. It also refers to their capabilities in problem solving and communication as well as their educational aspirations and self-concept as learners. The Accelerated School is also designed to be a dropout prevention program by eliminating the most important single cause of dropping out--serious achievement deficits.

Major Assumptions Underlying Accelerated Schools

As reflected in the works of Comer (1980) and Goodlad (1984), the stress is on the elementary school as a whole rather than on a particular grade, curriculum, approach to teacher training, or other more limited strategies. Underlying the organizational approach are three major assumptions: First, the strategy must enlist a unity of purpose among all of the participants. Second, the strategy must empower all of the major participants and raise their sense of efficacy and of responsibility for the outcomes of the school. Finally, the approach must build on the considerable strengths of the participants rather than decrying their weaknesses.

Unity of purpose refers to agreement among parents, teachers, and students on a common set of goals for the school that will be the focal point of everyone's efforts. Clearly, these should focus on bringing children into the educational mainstream so that they can fully benefit from their further schooling experiences and adult opportunities.

Empowerment refers to the ability of the key participants to make important decisions at the school level and in the home to improve the education of

students. It is based upon breaking the present stalemate among administrators, teachers, parents, and students in which the participants tend to blame each other as well as other factors "beyond their control" for the poor educational outcomes of disadvantaged students. Unless all of the major actors can be empowered to seek a common set of goals and influence the educational and social process that can achieve those goals, it is unlikely that the desired improvements will take place or be sustained (Bandura 1986; Rogers 1987). The Accelerated School must build upon an expanded role for all groups to participate in and take responsibility for the educational process and educational results. Such an approach requires a shift to a school-based decision approach with heavy involvement of teachers and parents and new administrative roles (Levin 1987). It requires information and technical assistance on alternatives as stressed in the New Haven approach (Comer 1980) as well as a useful system of assessment that can be used as a basis for accountability and for school decision-making.

Building on strengths refers to utilizing all of the learning resources that students, parents, school staff, and communities can bring to the educational endeavor (Seeley 1981). In the quest to place blame for the lack of efficacy of schools in improving the education of the disadvantaged, it is easy to exaggerate weaknesses of the various participants and ignore strengths. Parents have considerable strengths in serving as positive influences for the education of their children, not the least of which are their deep love for their children and their desire for their children to succeed. Teachers are capable of insights, intuition, and teaching and organizational acumen. These abilities are largely dormant in schools that fail to draw upon these strengths by excluding teachers from participating in the decisions that they must implement. Both parents and teachers are largely underutilized sources of talent in the schools.

People often overlook the strengths of disadvantaged students on the basis that they lack the learning characteristics of middle-class students, not realizing that disadvantaged students carry their own unusual assets which can be used to accelerate the learning process. These often include an interest and curiosity in oral and artistic expression, abilities to learn through the manipulation of appropriate learning materials (as stressed by Montessori), a capability for engrossment in intrinsically interesting tasks, and the ability to learn to write before attaining competence in decoding skills which are prerequisite to reading. In addition, such students can serve as enthusiastic and effective school resources

through peer tutoring and cooperative learning approaches.

School-based administrators are also underutilized by being placed in "command" roles to meet the directives and standard-operating-procedures of districts rather than to work creatively with parents, staff, and students. And, communities have considerable resources including youth organizations, senior citizens, businesses, and religious groups that should be viewed as major assets for the schools and the children of the community. The strengths of these participants can be viewed as a major set of resources for creating accelerated schools.

Within the context of empowerment and building-on-strengths, the school is based upon an accelerated curriculum and accelerated instructional strategies to bring all children up to grade level and into the educational mainstream and to make students see themselves in a very positive light as productive learners with many future possibilities. The entire organization of the school will focus on this as an initial goal rather than limiting interventions to "pull out" sessions in a school where the dominant agenda addresses other goals. Over time the emphasis on school-based decisions with the collaboration of the various participants may contribute to the development of other goals as well.

Features of the Accelerated School

Along with the assumptions underlying organization, the Accelerated School has several prominent features. Table 1 illustrates these features as well as the determinants of student learning that they are designed to affect.[4]

School-based Governance. The principles set out for the Accelerated School are relatively broad ones that can be designed and implemented in a wide variety of ways. The actual choice of curriculum, instructional strategies, and other school policies should be decided by the instructional staff of the school within the latitude set by the school district. These decisions will benefit from the substantial knowledge base that exists on the various dimensions of school programs that have been shown to be particularly effective for disadvantaged

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[4] This approach differs from the "Effective Schools" approach in major respects, especially the emphasis on a staff-based decision-model rather than the delegation of all authority to the "instructional leader." However, it shares important aspects such as high expectations and a focus on the entire school. See Edmonds 1979 and Purkey and Smith 1973.

students as set out below. But, the specific dimensions and their details must be considered, adopted, and molded by the school decision-makers. That is, the decision-making approach is a school-based one in which those who will be providing the instruction will make the decisions. As the school builds this capacity, it will be important to get parent representatives involved in the decision process as well.

Each school needs its own governance mechanism consisting of a governing body as a whole as well as a steering committee and task-oriented committees with particular assignments that will report to the steering committee and the governing body. These decision groups should be composed of instructional staff, other staff, parent representatives, and the principal of the school. The principal should undertake an important leadership role in identifying problem areas, obtaining pertinent information, coordinating the decision process, and assisting in group dynamics. The principal should also be responsible for obtaining and allocating resources from the school district to implement decisions.

Each school will set out a program that is consonant with the strengths of the district and local staff. In this way, the reform will be developed by those who must implement and evaluate the decisions, a process which is likely to enhance professional commitment. Indeed, the ability of teachers and other school staff to work together to shape the programs that will guide their daily activities is likely to make the school dynamic and exciting from the perspective of educational staff. It is this participation and accountability which are crucial for fully engaging the talents and commitments of educators. Details on shifting responsibilities from district offices to schools and on the internal organization of schools are discussed in Levin (1987).

Goals. In conjunction with the school district and school board, the governing body of the school should establish a clear set of goals for students, parents, and staff with respect to the purpose of the school and its activities. An over-riding goal of the Accelerated School is to bring the academic performance of students up to grade level to prepare them for mainstream educational opportunities by the completion of elementary school. The setting of overall school goals should also consider student attendance and participation in school activities; teacher attendance, participation, and morale; vandalism and behavior problems; and school contributions to the community through the performing arts and community service.

Each of the major constituencies will be consulted in setting these goals. The inculcation of school goals among students will serve to create high expectations and to improve their learning through increasing their effort and time devoted to such endeavors. For parents and school staff, the establishment of such goals should serve to raise expectations on the part of those constituencies in a way that will improve the instructional resource climate of the home and school. As collaboration becomes more fully established, new goals will be established and old goals may be modified.

Pupil and School Assessment. An assessment system is needed that evaluates the performance of children at school entry and sets a trajectory for meeting the overall school goal. Periodic evaluations on wide-spectrum, standardized achievement tests as well as tailored assessments created by school staff for each strand of the curriculum and school goal will enable the school to see if students are on the anticipated trajectory. Such an assessment system will serve both accountability purposes as well as diagnostic ones for improving instruction. In addition, a school-wide assessment system needs to be established to measure progress towards other goals such as parental involvement, student and teacher attendance, student participation, and so on.

Nutrition and Health. It is clear that the capacity of children to learn will be heavily conditioned by their nutritional status and health. Children without adequate diet and with dental and health problems are not likely to have the concentration and feeling of well-being that are prerequisite to learning. Especially important are undiagnosed and untreated hearing and vision problems, since virtually all learning activities are centered around these two senses. Schools should work with families and the various social service agencies (public and private) in the community to diagnose and address nutritional and health care needs of disadvantaged students to improve their capacity to learn.

TABLE 1

Features of Accelerated School for Disadvantaged

FEATURES	TO AFFECT* C	E	T	R
o **School-Based Governance**				x
o **Clear Goals**				
Students	x	x		
Parents			x	
Staff			x	
o **Pupil Assessment**				x
o **Nutrition and Health**		x		
o **Curriculum**				
Language	x	x	x	x
Mathematics	x	x	x	x
Other Areas	x	x	x	x
o **Instructional Strategies**				
Affective Aspects	x	x		x
Use of Time	x	x	x	
Peer Tutoring	x	x	x	
Cooperative Learning	x	x	x	
Homework	x	x		
o **Community Resources**				
Adult Tutors		x	x	
Businesses			x	
Social Service Agencies	x			
o **Parental Participation and Training**	x	x	x	x
o **Extended Session**	x	x	x	x

* C = Capacity; E = Effort; T = Time; and R = Learning Resources.

Curriculum. Major curriculum features that have been shown to be pertinent include a heavily language-based approach for all subjects, including mathematics.[5] Language use in all of its forms--reading, writing, speaking, and listening--must be stressed across the curriculum.[6] An emphasis should be placed on analysis, concepts, problem-solving and applications in all subjects from the early primary grades.

An especially important aspect will be the development of interesting applications that relate to the daily lives and experiences of the children and that demonstrate the usefulness of the tools and concepts presented to them. Students should be asked to discover for themselves applications of the concepts.

Writing should begin in the primary grades, as soon as students are able to develop even minimal vocabularies. Students should be exposed not only to narrative and poetic forms of language use, but also exposition. Mathematics should be presented through the development of concepts and applications in order to integrate and reinforce the standard arithmetic operations. Science and social studies will also build on the development of analytical skills, problem solving, concepts, and applications in order to provide a stimulating framework for the associative learning tasks. Most importantly, the students should be active subjects in their learning rather than passive objects.

Substantial attention should also given to the arts and physical activities. These are not only important for full human development, but they are often sources of great intrinsic satisfaction for the participants. Thus, they can serve an important role in making the school a vibrant and attractive experience along with the other curriculum areas. The curriculum design is aimed at increasing student capacity through providing conceptual and analytical tools that will enhance the capacity to learn more advanced material; expanding effort through its purposive attempt to make the school experience more engaging (Richardson 1987); improving the use of time; and raising the quality of instruction.

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[5] See Romberg (1986) for a review of issues pertaining to mathematics curriculum and instruction. See Cuevas, Mann, and McClung 1986 for evidence on the effects of a language-based approach to mathematics.

[6] One approach that builds on creating staff potential for the types of language programs which are suggested is Project Read. See (Barton and Calfee 1987 and Calfee and Henry 1986).

Instructional Strategies.[7] The choice of instructional strategies should rely heavily on ones that will reinforce the curriculum approach and build on techniques that have shown effectiveness with the disadvantaged. The use of time should stress greater availability of instructional time as well as more effective use. The instructional pace must be adequate to keep students attentive and learning at a rate that is productive, in contrast to the deliberate slowdown usually associated with remedial instruction. Curriculum and teaching approaches should be used to advantage to maintain interest of students and engage them in active learning. Of special importance in this regard the techniques associated with Lozanov and the Suggestive-Acceleration Learning Technique movement as applied by Richardson (1987) to the Accelerated School.

Peer tutoring has been shown to be an unusually effective approach for disadvantaged youngsters (Madden and Slavin 1987: 9-15). Among its advantages are flexibility in allowing older children to tutor younger ones or more advanced students at the same level to tutor their colleagues. Additionally, the tutors often learn as much as those whom they are tutoring. Finally, it is an ideal strategy for heterogeneous student groupings, since those who are more knowledgeable are tutors for those who need to master the material.

Cooperative learning is another effective strategy for enhancing learning among diverse groups (Cohen 1986; Slavin 1983). Students are given group assignments in which there will be rewards for group proficiency, providing incentives for the more able students to help those who need assistance. Group approaches seem to be relatively effective for disadvantaged students in contrast with the individual approach that is common in elementary schools.

The use of outside assignments or homework that must be done outside of the classroom is important in teaching independence and self-reliance. Such assignments can be made on a group or individual basis, and they prepare students for later grades when a high proportion of learning will take place through such

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[7] An important review of the effectiveness of various instructional strategies for students-at-risk is found in Madden and Slavin (1987) and Slavin and Madden (1987). These reviews emphasize both "pull-out" programs and classroom programs. However, they do not address the central focus of this paper which is an overall organization thrust to focus all school programs on the needs of these students and the reinforcing and symbiotic effects of such an approach. Rather, the analysis is done on a program-by-program basis without consideration of mutually supportive and cumulative effects.

study. Even in the first grade students will be given such assignments. While this strategy focuses on expanding student effort and the amount of time for learning, the other instructional strategies also address the quality of learning resources.

Community Resources. Accelerated schools must enlist all of the resources at their disposal to accomplish their mission. Among these are adult tutors who can work with individual students and provide assistance to teachers. An especially rich source of such talent are senior citizens, many of them former teachers, who seek productive activities and social interaction. In addition, local businesses can be enlisted to provide personnel and other resources to assist accelerated schools. Social service agencies can address basic needs of families including health care, nutrition, and counseling and youth agencies such as the boy scouts and girl scouts or Big Brothers and Big Sisters can offer enrichment programs for the young after school, on weekends, and during summers.

Parental Participation and Training. Parents should be deeply involved in two ways. First, all parents or guardians should be asked to affirm an agreement that clarifies the goals of the Accelerated School and the obligations of parents, students, and school staff. The agreement should be explained to parents and translated, if necessary. Parental obligations will include such supportive roles as ensuring that their children go to bed at a reasonable hour and attend school regularly and punctually. They will be asked to set high educational expectations for their children, to talk to them regularly about the importance of school, and to take an interest in their children's activities and the materials that the children bring home.

Parents should be asked to encourage their children to read on a daily basis and to ensure that independent assignments are addressed. They should also be expected to respond to queries from the school. The purpose is to emphasize the importance of the parental role through the dignity of a written agreement that is affirmed by all parties. Students and school staff should also have appropriate obligations regarding their roles, with the understanding that the Accelerated School will only succeed if all three parties work together.

Second, parents should be given opportunities to interact with the school program and to receive training for providing active assistance to their children. Such training should include not only the skills for working with a child but also many of the academic skills necessary to understand what the child is doing. In

this respect, it may be necessary to work closely with agencies offering adult basic education to provide the parental foundation. The parental dimension can improve the capacity and effort of the child as well as increase the time devoted to academic learning and provide additional instructional resources in the home (Epstein 1987; Kelly and Smrekar 1987).

Extended Daily Session. An extended session until 5 p.m. should provide additional learning time for the youngsters. Following the ending of the normal school session in early or mid-afternoon, the extended-day program would provide rest period, physical activities, the arts, and a time for doing independent assignments or homework. During this period, college students and senior citizen volunteers would work with individual students to provide learning assistance. Since many of the children are "latch-key" children, the extension of the school day is likely to be attractive to parents. A summer session should also be considered to offset learning declines associated with the summer vacation (Heyns 1978). The variety of activities would address all four components of student learning, capacity, effort, time, and learning resources.

V. SUMMARY

The case for creating accelerated schools for disadvantaged students is compelling. The large and growing numbers of such students, their low educational attainments under present schooling methods, and the deleterious consequences for both these students and the larger society of not intervening represent passionate arguments for drastic improvements in their education. The strategies for creating accelerated schools are at hand and evidence from similar efforts by James Comer and his associates suggests these strategies can bring disadvantaged students into the educational mainstream.

Although the implementation issues are beyond the scope of this paper, it is important to address briefly a few of the salient ones such as cost, organization, time requirements, and technical support. Not all of the dimensions of the proposed Accelerated School will have cost implications since much of the effort will require doing different things with available resources. However, such aspects as an extended day and possible summer programs, parental education, and tutoring programs are likely to require additional resources. While major strides can be made within existing resources, the full development of accelerated schools will require additional resources for full program implementation. On the basis of benefit-cost studies, additional costs may be far outweighed by additional social benefits (Levin 1972; Catterall 1986).

With respect to time, there are two concerns. First, is the issue of how long it will take to transform an existing school to a fully accelerated one. My own view is that this will be a developmental process that should take about six years for an elementary school with a kindergarten and six grades. As school districts gain experience in the approach and benefit from both in-service and pre-service training, it may be possible to accomplish the transition in a shorter period of time (e.g., four years). Clearly, the early years must address the establishment of effective systems for staff decision making, assessment, and for specifying curriculum goals, methods, and content, while the subsequent years can implement additional instructional features of the approach. It may also be useful to transform curriculum for one or two grades each year in this transitional period.

A second concern about time is finding enough of it during the school year

and summer to enable school staff to plan, make decisions, and receive training. The existing school year provides precious little time to make a major transformation of school organization and activities. Perhaps this is one reason for the popularity of instructional "packages" that require only a few hours of staff training, even though subsequent evaluations do provide evidence that such packages are educationally effective. A larger part of the school year and summer must be freed up for school staff to invest in planning and implementation and staff development.

In terms of school organization, it will be necessary to increase both accountability and decision responsibilities of individual schools. This can be done by creating appropriate decision structures at the local school level and providing the school with the information, technical assistance, and resources to address its challenges as well as a system of assessment that enables it to evaluate progress. It will also require the school district to change its orientation from that of a central agency that sets out standardized directions and directives for individual schools to one which provides services for local school clients. A preliminary model for such changes has been proposed (Levin 1987).

Finally, it is necessary to establish a capacity for providing information and technical assistance to accelerated schools during the developmental phases. While the Accelerated Schools Project at Stanford has created modest capacity for such assistance (enough to work with two schools) and the beginning of a clearinghouse to support accelerated schools around the country, the ultimate support for such schools must be established in the school districts themselves. Currently, the Project is working with regional educational laboratories to establish this capacity in school districts. It will also be necessary to prepare teachers and administrators for accelerated schools through methods such as training programs that emphasize skills in group decision making and problem solving. These topics are subjects of future papers on accelerated schools.

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